

WHAT IS CLAIMED IS:

1. An image forming apparatus comprising:

an optical fiber;

a transmission device connected to the optical fiber, the transmission device transmitting optical signals over the optical fiber;

an optical scanning device connected to the optical fiber, the optical scanning device emitting an optical beam;

a synchronizing device connected to the optical fiber, the synchronizing device detecting the optical beam in a detection area and transmitting a synchronizing signal over the optical fiber in response to the detected optical beam.

2. The image forming apparatus according to claim 1, further comprising a wavelength converting device converting a wavelength of the detected optical beam.

3. The image forming apparatus according to claim 1, further comprising a wavelength converting device converting a wavelength of the synchronizing signal.

4. The image forming apparatus according to claim 3, wherein bi-directional communication is established over the optical fiber between the transmission device and the optical scanning device.

5. The image forming apparatus according to claim 4, wherein the optical scanning device scans an object in an image area using the emitted optical beam.

6. The image forming apparatus according to claim 5, further comprising a reflecting device reflecting the optical beam from an area adjacent the image area, the reflected optical beam being reflected to the detection area.

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7. The image forming apparatus according to claim 6, wherein the reflecting device is a SOS mirror.

8. An image forming apparatus comprising:
a transmission device sending optical signals over an optical fiber; and
an optical scanning device scanning an object using an optical beam emitted from the optical fiber, detecting the optical beam at a detection position provided outside an image region, and synchronizing a main scan direction based on the detected beam;

wherein a synchronizing optical output of the detected optical beam is subjected to a wavelength conversion by a wavelength converting device, and bi-directional communication is accomplished using the optical fiber transmitting the optical signals.

9. The image forming apparatus according to claim 8, further comprising a reflecting device reflecting the optical beam from an area adjacent to the image region to the detection position.

10. The image forming apparatus according to claim 9, wherein the reflecting device is a SOS mirror.

11. An image forming apparatus comprising:
a transmission device sending optical signals over an optical fiber;
a synchronizing optical output device emitting a synchronizing optical output, wherein a synchronizing wavelength of the synchronizing optical output is different from a signal wavelength of the optical signals transmitted by the transmission device; and

an optical scanning device scanning an object using an optical beam emitted from the optical fiber, detecting the optical beam at a detection position outside an image region, detecting the synchronizing optical output, and synchronizing a main scan direction based on the detected synchronizing optical output;

wherein bi-directional communication is accomplished over the optical fiber transmitting the optical signals by the transmission device and the optical scanning device.

12. The image forming apparatus according to claim 11, further comprising a wavelength converting device connected to the optical fiber, the wavelength converting device converting a detected beam wavelength of the detected beam.

13. The image forming apparatus according to claim 12, further comprising a reflecting device reflecting the optical beam at the detection position, the reflected optical beam being reflected towards the optical scanning device.

14. The image forming apparatus according to claim 13, wherein the reflecting device is a SOS mirror.